

Efficacy of Fresh Herbs Knee Mask Formula to Relieve Knee Pain in Osteoarthritis Elderly Patients

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Abstract

Efficacy of fresh herbs knee mask formula was investigated to relieve knee pain and degree of motion in 60 osteoarthritis elderly patients at Ban Dong Kham Pho Health Promoting Hospital, Waritchaphum District, SakonNakhon Province. The samples were divided into two groups as (1) patients who received fresh herbs knee mask service, and (2) patients who did not receive fresh herbs knee mask service. Experimental tools included knee pain assessment and a goniometer for range of motion. Statistical analyses were conducted using dependent and independent t-tests. The results showed that initial knee pain at a scale of 4.87 (S.D.= 1.18). After 5 days of treatment with fresh herbs knee mask service, knee pain reduced to 1.70 (S.D.= 1.19), while after 3 weeks knee pain decreased further to 1.63 (S.D.=1.45) with statistically significant differences ($p < 0.05$) from the non-experimental group and initial stage. It is indicated that the experimental group experienced initial degrees of knee motion at 43.97 (S.D.= 13.81). After 5 days of treatment this reduced to 34.47 (S.D.= 12.85) and then remained constant after 3 weeks at 34.43 (S.D.=13.36) with statistically significant differences ($p < 0.05$) for both the non-experimental group and initial stage.

Keywords: Osteoarthritis, fresh herbs knee mask formula, elderly, Thai traditional medicine

Introduction

Osteoarthritis is the most common global chronic disease exhibiting gradual and progressive pathogenesis through aging. Initially, cartilage bone flakes away around the joints and osteophytes develop as bony lumps, creating a rough surface around the bone joint and reducing flexibility. This bone flaking stimulates inflammation, edema, and fibrosis through the increasing friction of joint movement, causing pain as the main symptom of osteoarthritis. Other symptoms are loosening of joint membranes and tendons together with quadriceps and hamstring muscular weakness. Current treatment for osteoarthritis patients focuses on relieving pain and friction. For knee mobility, most patients are treated using oral drugs including painkillers and anti-inflammatories. After receiving these drugs for an extended period, the patient may experience side effects such as bleeding in the stomach, nausea, vomiting and abdominal pain. In severe cases, patient stressed with steroids may stimulate osteoporosis and osteoarthritis [1].

In Thailand, more than 6 million elderly people were diagnosed with osteoarthritis, including 40% of those over 50 years old with a higher number of women than men. For those less than 45 years old, osteoarthritis was more common in men than women but for people over 45 years old the disease was more common in women than men. At over 75 years old, both men and women were diagnosed with osteoarthritis at over 80-90% [2]. Treatment using Thai Traditional Medicine as fresh herbs knee mask formula avoids the necessity of oral drugs as painkillers and decreases costs for the elderly who frequently use hospital services.

The objective of this study was to investigate the efficacy of fresh herbs knee mask formula in relieving knee pain and improving joint motion in elderly patients with osteoarthritis.

Materials and methods

Study samples

Study samples consist of 60 elderly osteoarthritis patients at Ban Dong Kham Pho Health Promoting Hospital, Waritchaphum District, SakonNakhon Province and divide them into two equal portions as control group and experimental group. Explain the research objective and describe the research process and signed consent forms to participate in the research to the elderly osteoarthritis patients.

Preparation of fresh herbs knee mask

Weigh 3 fresh herbs consist rhizomes of Plai (*Zingiber cassumunar*), Kaminchan (*Curcuma longa*), and leaves of Thongphanchang (*Rhinacanthus nasutus*) in the specified ratios as 5 gram and weigh 4 fresh herbs consist leaves of Kwamtaingaipe (*Bryophyllum pinnatum*), Sadao (*Azardirachta indica*), Yanang (*Tiliacora triandra*), and Plappleung (*Crinum asiaticum*) in the specified ratios as 7 gram then grind roughly be called Luang Pu Fab Supatto fresh herbs knee mask formula and test for irritation with 10 volunteers. Fresh herbs knee mask were stored at room temperature until used for experiment.

The assessment of knee pain and knee degree of motion

Both experimental and control groups were assessed by in-depth interviews regarding knee pain levels [3], and knee degree of motion was measured using a goniometer after treatment with Luang Pu Fab Supatto fresh herbs knee mask formula. The experimental group was treated with fresh herbs knee mask formula. For each treatment, fresh herbs were rubbed on the knee with a cloth for about 30 minutes. The treatment was performed once a day for five days. The control group received steam treatment for 30 minutes. A physical examination was conducted to measure knee degree of motion using a goniometer, and in-depth interviews assessed knee pain levels after treatment with fresh herbs knee mask formula for the experimental group and after steam treatment for the control group. The results were recorded. After five days of continuous treatment, follow up treatments were conducted once per week for four weeks.

Data collection and analysis

Data obtained from the experiment was collected and analyzed. The analytical dependent and independent t-tests were used for analyzed knee pain scale and knee degree of motion.

Results

The study samples were 60 elderly patients with osteoarthritis. They were equally divided into an experimental group of 30 people and a control group of 30 people. Both control and experimental groups consisted of 76.67% as females. Patients in the control and experimental groups aged between 60-69 years were 83.33% and 56.67%, respectively.

Results showed that initial knee pain was measured at a scale of 4.87 (S.D.=1.18), and after 5 days of continuous treatment with fresh herbs knee mask service, knee pain reduced to 1.70 (S.D.=1.19) (Table 1).

Table 1. Comparison of average knee pain in the experimental group before and after application of fresh herbs knee mask treatment consecutively for 5 days

(n = 30)

Assessment time	n	\bar{x}	S.D.	t	p
Day 1					
Before treatment	30	4.87	1.18	5.86	0.000*
After treatment	30	3.77	1.20		
Day 5					
Before treatment	30	2.23	1.33	5.76	0.000*
After treatment	30	1.70	1.19		

* Statistically significant at 0.05

Three weeks after receiving treatment, knee pain decreased further to 1.63 (S.D.=1.45) with statistically significant difference ($p < 0.05$) from the non-experimental group and initial stage (Table 2).

Table 2. Comparison of average knee pain in the experimental group before and after application of fresh herbs knee mask treatment and follow up at week 1 and week 3

(n = 30)

Assessment time	n	\bar{x}	S.D.	t	p
Follow up at week 1					
Before treatment	30	1.87	1.37	3.07	0.002*
After treatment	30	1.53	1.18		
Follow up at week 3					
Before treatment	30	2.03	1.56	4.30	0.000*
After treatment	30	1.63	1.45		

* Statistically significant at 0.05

Results also showed that the experimental group experienced initial knee degree of motion at a scale of 43.97 (S.D.=13.81). Five days after receiving fresh herbs knee mask treatment, knee degree of motion reduced to 34.47 (S.D.=12.85) (Table 3).

Table 3. Comparison of average knee degree of motion in the experimental group before testing at day 1 and after testing at day 5

(n = 30)

Assessment time	n	\bar{x}	S.D.	t	p
Before treatment at day 1	30	43.97	13.81	5.91	0.000*
After treatment at day 5	30	34.47	12.85		

* Statistically significant at 0.05

Three weeks after receiving this service results remained constant at 34.43 (S.D.=13.36) with statistically significant difference ($p < 0.05$) from the non-experimental group and initial stage (Table 4).

Comparison of average knee degree of motion in the experimental group before treatment at day 1 and after follow up at week 3 showed average value before day 1 as 43.97 (S.D.=13.81) and average after follow up at week 3 as 34.43 (S.D.=13.36). Comparison with average knee degree of motion as kneel and heel closed with fat buttocks in the experimental group before treatment at day 1 and after follow up at week 3 indicated that

average knee pain at week 3 was less than before treatment, with statistical significance ($t=5.45$, $p=0.000$) (Table 5).

Table 4. Comparison of average knee degree of motion in the experimental group, with follow up at week 1 and week 3

(n = 30)

Assessment time	n	\bar{x}	S.D.	t	p
Follow up at week 1					
Before treatment	30	34.97	13.35	6.56	0.000*
After treatment	30	33.77	13.47		
follow up at week 3					
Before treatment	30	36.33	12.98	6.24	0.000*
After treatment	30	34.43	13.36		

* Statistically significant at 0.05

Table 5. Comparison of average knee degree of motion in the experimental group before treatment at day 1 and after follow up at week 3

(n = 30)

Assessment time	n	\bar{x}	S.D.	t	p
Before treatment at day 1	30	43.97	13.81	5.45	0.000*
After follow up at week 3	30	34.43	13.36		

* Statistically significant at 0.05

Comparison of average knee pain in the control group before treatment at day 1 and after treatment at day 5 showed average value before treatment at day 1 as 3.87 (S.D.=1.48) and average value after treatment at day 5 as 3.53 (S.D.=1.18). Comparison with average knee pain before and after treatment indicated that average knee pain after treatment reduced with statistical significance ($t=1.78$, $p=0.04$) (Table 6).

Table 6. Comparison of average knee pain in the control group before treatment at day 1 and after treatment at day 5

(n=30)

Assessment time	n	\bar{x}	S.D.	t	p
Before treatment at day 1	30	3.87	1.48	1.78	0.04*
After treatment at day 5	30	3.53	1.18		

* Statistically significant at 0.05

Comparison of average knee degree of motion in the control group before treatment at day 1 and after treatment at day 5 showed average knee degree of motion before treatment as 39.87 (S.D.=13.07) and average after treatment at day 5 as 38.57 (S.D.=14.25). Comparison of averages before and after treatments indicated that knee degree of motion after treatment at day 5 was less than at day 1, with statistical significance (t=1.71, p=0.043) (Table 7).

Table 7. Comparison of average knee degree of motion in the control group before treatment at day 1 and after treatment at day 5

(n =30)

Assessment time	n	\bar{x}	S.D.	t	p
Before treatment at day 1	30	39.87	13.07	1.71	0.043*
After treatment at day 5	30	38.57	14.25		

* Statistically significant at 0.05

Comparison of average knee pain between the experimental and control groups showed that average in the experimental group was 3.23 (S.D.=1.58) and average in control group was 0.33 (S.D.=1.01). Comparison of average knee pain between experimental and control groups by independent t-test indicated that average reduction of knee pain in the experimental group was more than in the control group, with statistical significance (t=8.19, p=0.000) (Table 8).

Comparison of average knee degree of motion in the experimental group and control group by independent t-test showed the former as 9.53 (S.D.=9.43) and the latter as 1.30 (S.D.=4.08) with statistical significance (t=4.39, p=0.000) (Table 9).

Table 8. Comparison of average knee pain in the experimental group with control group (n=60)

Patients	n	\bar{x}	S.D.	t	p
Experimental group	30	3.23	1.58	8.19	0.000*
Control group	30	0.33	1.01		

* Statistically significant at 0.05

Table 9. Comparison of average knee degrees of motion in the experimental group and control group (n=60)

Patients	n	\bar{x}	S.D.	t	p
Experimental group	30	9.53	9.43	4.39	0.000*
Control group	30	1.30	4.08		

* Statistically significant at 0.05

Discussion

Osteoarthritis is the most common global musculoskeletal disorder effective joints [4]. Current treatment for osteoarthritis patients focuses on relieving pain and friction and treated using oral drugs including painkillers and anti-inflammatories. After receiving these drugs for an extended period, the patient may experience side effects [1]. In Thailand, The prevalence of osteoarthritis is at 11.3% [5] and more than 6 million elderly people were diagnosed with osteoarthritis, including 40% of those over 50 years old, both men and women were diagnosed with osteoarthritis at over 80-90% [2].

Currently, treatment of Osteoarthritis with many herbal drugs has become attentiveness [6]. Many herbal have probability usefulness in the treatment of Osteoarthritis called under different names from region to region and is widespread in Thailand generally known as Plai (*Zingiber cassumunar*), Kaminchan (*Curcuma longa*), Kwamtaingaipen (*Bryophyllum pinnatum*), Sadao (*Azardirachta indica*), Thongphanchang (*Rhinacanthus nasutus*), Yanang (*Tiliacora triandra*), and Plappleung (*Crinum asiaticum*).

Plai (*Zingiber cassumunar*) and Kaminchan (*Curcuma longa*) has been shown to be effective in the management of prevent the formation of inflammatory mediators such as thromboxane, leukotrienes and prostaglandins [7,8,9]. In vivo studies, Kwamtaingaipe (*Bryophyllum pinnatum*) leaves extract has been shown reported to contain flavonoids, polyphenols, triterpenoids of β -amyrin structure, phytosterols, and be able to anti-inflammatory properties [10]. Sadao (*Azardirachta indica*) leaves has been shown ability to be anti-inflammatory properties [11], as well as Thongphanchang (*Rhinacanthus nasutus*) leaves extract has been shown reported to composed of rhinacanthin-C (Rn-C) that found to be the major naphthoquinone and potent anti-inflammatory [12,13]. In recent study, Yanang (*Tiliacora triandra*) juice extracted from leaves has been inhibitory effects on inflammatory mediators lead to inducible nitric oxide synthase, and cyclooxygenase-2, addition to phenolic compounds and chlorophyll are responsible for the anti-inflammation [14]. Moreover, Plappleung (*Crinum asiaticum*) extracted has been anti-inflammatory by the inhibition of inducible nitric oxide synthase (iNOS) and the release of IL-6, IL-8, and PGE2 [15].

In our study, the local herbal 7 species composed of Plai (*Zingiber cassumunar*), Kaminchan (*Curcuma longa*), Kwamtaingaipe (*Bryophyllum pinnatum*), Sadao (*Azardirachta indica*), Thongphanchang (*Rhinacanthus nasutus*), Yanang (*Tiliacora triandra*), and Plappleung (*Crinum asiaticum*) were preparation of fresh herbs knee mask called Luang Pu Fab Supatto fresh herbs knee mask formula to the investigate the efficacy of fresh herbs knee mask formula in relieving knee pain and improving joint motion in elderly patients with osteoarthritis.

Results after treatment with fresh herbs knee mask formula for 5 days consecutively and follow up weekly for 1 month showed that the experimental group had an average knee pain level decrease as 3.23 (S.D.=1.53) while the control group recorded 0.33 (S.D.=1.01). The experimental group showed average knee pain level decrease more than the control group. These findings corresponded with Orasa Opatwattana *et al.* [16] who showed that the efficacy to relieve knee pain in osteoarthritis elderly patients after treatment with fresh herbs knee mask differed from non-experimental patients with statistical significance ($p < 0.05$). Results of knee degree of motion after treatment with fresh herbs knee mask formula for 5 days consecutively and follow up weekly after 1

month for the experimental group showed average lower knee degree of motion as 9.53 (S.D.=9.43), while the control group recorded 1.30 (S.D.=4.08) indicating that the experimental group had average lower knee degree of motion than control group.

Efficacy of fresh herbs knee mask formula in decreasing knee degree of motion in osteoarthritis elderly patients between experimental and control groups was statistically significant ($p < 0.05$). These finding corresponded with Kanreuthai Malai [17] who showed that fresh herbs knee mask treatment relieved knee pain in osteoarthritis elderly patients and Rattanaporn Maganut [1] who showed the fresh herbs knee mask treatment resulted in improved knee degree of motion.

Conclusions

The fresh herbs knee mask formula has probability usefulness in the treatment of Osteoarthritis because of potent anti-inflammatory and showed efficacy to relieve knee pain and decrease knee degree of motion corresponding with the study hypothesis. Finally, Thai Traditional Medicine treatment with fresh herbs knee mask formula has become attention helps to avoid oral drugs reduces pain and decreases the cost for elderly people who often use hospital services.

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